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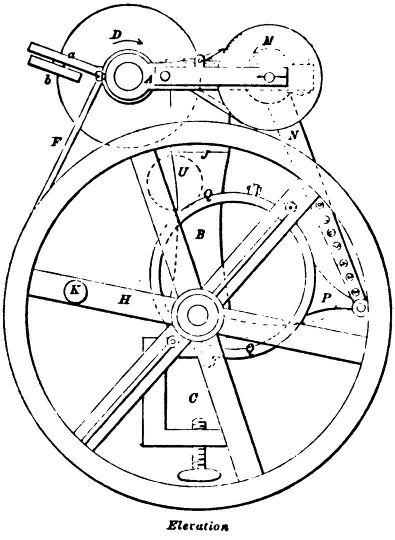
DESCRIPTION OF ROTARY SECTION CUTTER.

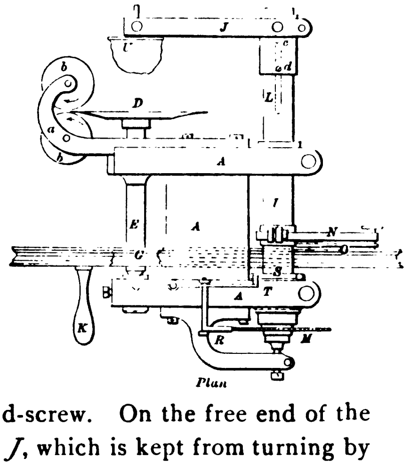
Rev. J. J. B. Hatfield, Indianapolis, Ind.

This Section Cutter is rotary in all its moving parts except the specimen carrier in its approach to the knife, and of the horizontal frame *A*, which is supported by the standard *B*, the lower end of which is a clamp, *C*, for fastening on a table near a corner to give the driving-wheel clearance.

D is the circular knife, mounted on the shaft *E*, which is rotated by the pulley *G* and belt *F*, from the driving-wheel *H*. *I* is a hollow shaft, and contains the nut and feed-screw. On the free end of the shaft *I* is mounted the carrier arm *J*, which is kept from turning by a spline working in the slot *L*, and is rigidly connected with the nut



Elevation



Plan

(which is 4″ long) by the screws *c d* passing through the sleeve and spline, and screwing into the nut. *M* is the feed-wheel mounted on the right-hand end of the feed-screw. *N* is a lever, the upper end embracing the shaft *I*; the lower end connected with the projecting arm *P* of the eccentric, which, by its revolution with the driving-wheel, communicates the necessary vibratory motion to the carrier arm; as may be seen in dotted lines in the elevation at *J*. The eccentric can be given any throw within its compass, by sliding along the slotted arms of the driving-wheel. The throw may also be varied by connecting the eccentric with the vibrating lever *N*, at the various points, 1, 2, 3, 4, &c. When making a cut, all the parts connected with the shaft *I* rotate in the direction of the arrow on the feed-wheel *M*, but in the return stroke, the pawl *R* catches in the teeth of the feed-wheel, holds it while all the other parts continue the return motion to the end of the stroke; this causes the screw to turn in the nut, or rather the nut to turn on the screw, and advance the carrier and specimen to the knife. *S* is a cam embracing the shaft *I*, and may be set in any position around the shaft, and by its action on the part *T* of the pawl, determines the number of teeth that will be taken at each stroke.

The feed-screw has twenty threads to the inch, and the wheel one hundred teeth; the finest feed is therefore two thousand to one inch.

The two wheels *b b* on the plan, and *b* on the elevation supported by the bar *a*, constitute the automatic sharpener. Their surfaces are covered with leather, which is supplied with tripoli or rouge, from time to time as needed. These wheels are set at a slight angle with the radius of the knife, as shown in elevation, and while the knife may have a very rapid revolution, the wheels move but slowly. When not needed, the bar *a* and wheels may be turned up out of the way. After the specimen is embedded by dipping or casting, one side is cut flat, the plate *U* is heated and held in contact with the flattened surface a short time, the stem put into the carrier arm and turned. If the specimen is to be kept in book form, put a piece of tissue-paper on the lower side of the cast, and cut to it.